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ABSTRACT

This paper presents information for educators on delivering an Internet-based course. The paper is divided into three parts. Part 1, "Teaching on the Web, What Is It?," lists advantages and disadvantages of face-to-face classroom instruction, traditional distance education, and Internet-based education which combines features from both these methods. Four proposed models of using the Internet as part of a course (i.e., informational, supplementary, dependent, and fully online) are offered, followed by a discussion of how the Internet can be used to deliver courses, what "added value" means to education via the World Wide Web, accessing course resources on the Web, and forms of interactivity. Part 2, "Training and Skilling Teachers," highlights technology-based skills teachers must develop and lists workshops/tutorials designed to assist teachers with the skills and support needs for developing courses on the Internet. Part 3, "Challenges," proposes several questions that must be addressed when planning/implementing Internet-based instruction. (AEF)

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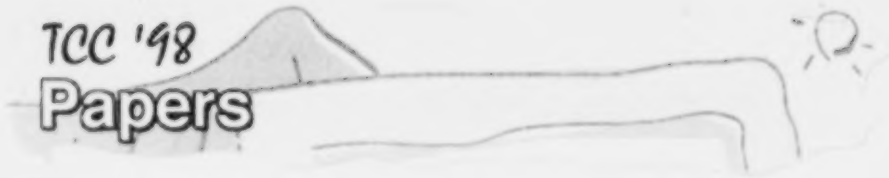

SO YOU WANT TO DELIVER A COURSE USING THE INTERNET!

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PART 1: TEACHING ON THE WEB, WHAT IS IT?

Delivery of education has undergone a number of changes throughout history. The main delivery methods today are 'face to face' and 'distance education'. The latest delivery method is 'On-line education' using the Internet.

In the industrial age, most formal education was based on a factory model. That is, a campus (factory) was built and the students and teachers (employees and management) arrived at the campus and went to school. For those who could not physically attend the campus, assignments (raw materials for piece work) were sent via the post, and when the work is completed it was returned by post to be marked.

With the advent of the information age it is now possible for learners to stay at home and for the classroom to come to them, like a travelling tutor or School of the Air. While this is a simplistic view of education delivery methods, it does point out that while changes are occurring, there are some historical precedents which provide a foundation for a new delivery model. [See Reference 1-1]

As this new method evolves, some fundamental concepts can be drawn from history and educational experience. [1-2]

- Simply putting content in front of a learner is not education.
- ducation requires activity, work, and application to become useful.
- Pedagogy is more important than technology. The value of any technology is found only in how it adds value to the educational objectives. Technology in itself is not education, but it can be a facilitator.
- The role of the teacher is changing. However, a teacher still plays an important part in the overall educational process. Teachers who are enthusiastic toward the subject material and delivery methods are more likely to provide a positive educational experience for students.
- Any quality educational material requires a team effort, effective support, learning new skills, resources, and time to mature.
- Good educational materials can be used with a variety of traditional and innovative delivery methods.
- There is no one method of delivery that suits all students, and students do not always respond to a single method of delivery in the same way.

Education using modern communications tools is here and is not going to disappear.

COMPARING THE MODELS: [1-3]

CLASSROOM: "FACE TO FACE" -- This is the traditional method of delivering classroom education. The teacher meets with the students at specific times and a 'class' is held. During the 'class' students and teachers interact in the immediate environment, learning from each other.

Some Advantages
* Allocated time with teacher * Peer Group interaction/support * Group Synergy * Possible immediate response

Some Disadvantages
* Difficult to make contact outside of class hours * Need to attend at particular time and place *'A member may get a disproportionate amount of time

DISTANCE EDUCATION-- Traditional distance education is seen as a student enrolling in a class. Then the material is mailed to the student. The student works on the material, sending the assignments back to the teacher via the post for marking. **Some Advantages**
* Study when and where you choose * Can contact via phone or mail

Some Disadvantages
* Slowness of responses * No (or minimal) peer support * Lack of group synergy

INTERNET-- The proposed model for Internet delivery of education attempts to combine features from both the "face to face" and distance education methods and add some unique features available using the Internet.

Advantages
* Study where and when you choose * Can have contact with teacher outside of class * Group Synergy * Participate in group discussions * Students can access and add material on line at any time * Interactive with immediate feedback in many situations

Disadvantages
*** No human-face-to-face contact * Computer literacy required * Access to hardware and Internet required**

WHAT IS AN INTERNET COURSE LIKE?
There are several models for using the Internet in education. While the names and number of models may vary, the substance is similar. [1-4] Here are four proposed models of using the Internet as part of a course:

Informational (Level 1) -- The Internet is used to provide information to students that is relevant to the administration of the class. This includes items such as timetables, syllabi, and class notices.

Supplementary (Level 2) -- In addition to the Information model, additional resources are provided for students. Resources may include additional references and useful hints. The material presented in this model is not required by the student educational experience but can be used to enhance the experience.

Dependent (Level 3) -- The major components of the course are on the Internet and students need to access these as part of the course. Included would be learning materials in addition to the above models.

Fully On-line (Level 4) -- The entire course and activities are on the Internet.

Given the above four models, a number of variants can be implemented. [1-5]

- Classroom Model: Classes are held in a classroom/computer room environment and students access the Internet as part of that course.
- Residential School Model: Students study the course using the appropriate model and attend residentials or workshops.
- Structure Interactive Internet model: The units involve a wide range of synchronous (real time interactive) activities such as chat and asynchronous (anytime activities) such as E-mail and conferencing techniques. The teacher is very involved in the conducting of the classes.
- Structure Non-Interactive Internet model: Using many of the features of the Interactive Internet model. However, the teacher's involvement is much less. The teacher would assist the class by offering a range of possibilities for class involvement but act as a facilitator for the group as required.
- Distance Education model: The course material is prepared, put on the web, and the teacher has minimal contact with the students except when they have a question or request an assessment.

HOW CAN THE INTERNET BE USED TO DELIVER COURSES?

The Web is very adaptable to a large number of conditions. The four suggested models are probably already familiar. 1) One Student and One Computer -- The teaching unit is provided to the student who uses it on one computer only. This model is similar to many programs you would have used in the past before networks were widely used. You probably still use this method when you use a word processor, spreadsheet, or most other computer programs in your office. 2) Networked Classroom -- Design an Internet teaching unit and use it only in your local campus computer rooms. 3) Intranet Wide -- Place a unit on the Institute's Intranet server. Material can be made available throughout the whole Institute rather than on just one campus. 4) World Wide -- Courses are located on the external Internet server and can be available to the whole world. For most people this is the way they see most Web courses being provided.

Note: Once developed, material developed for delivery in any of the above environments can be adapted to any of the other forms.

WHAT DOES "ADDED VALUE" MEAN TO EDUCATION VIA THE WEB?

Added value means to go beyond the mere presentation of facts. [1-6] For some examples: * In a classroom, added value comes from the immediacy of the experience. Students have questions, raise their hands, and get answers. Students and teachers interact and enrich the experience for themselves and others. * In distance education, added value comes from the ability to study when they choose and seek out new ways of solving problems. * Flexible delivery offers students a chance to work at their own pace and yet have opportunities to interact with other students. * Internet delivery can offer all the above, plus some additional added value features such as these:

a) Students do not have to be located physically near the education centre.

b) The Internet provides students with the chance to study anytime and anywhere. Their learning is self paced.

c) Resources for the subject are not limited to those available locally. The Internet provides resources that are up to date and varied. Students can quickly search out new and relevant resources and share them with others.

d) Using features such as E-Mail, Chat, Notice Boards and Annotation, the educational experience can be very interactive. The interactively leads to group learning, even if all students are not in the class at the same time.

e) Using interactive forms, feedback to students can be instantaneous. In cases where material cannot be evaluated immediately, E-Mail allows for a quick responses to the requests.

USING OTHER RESOURCES

Assume that the students are enrolled in a class about current events. In a normal educational situation, the resource material is either provided or referenced. The student then seeks out these resources by going to the material or to where the referenced material is located. Getting the material can be time-consuming, especially if the resource is being used by some other student. The material may also be outdated, and new and relevant material may be missed.

Doing the same work on the Internet, the student can access the material supplied by the teacher (the web page), access the referenced material (using links) on the Internet, and use a search engine to look for other relevant material.

Web pages are the basis of initial communications via the Web. The teacher produces these pages as a resource for the subject. Links are imbedded into a page, and by clicking on the link you are connected to the resource. Using a search engine such as AltaVista or DogPile allows students to search the Web using key words or phrases.

Using the Internet, material that is relevant can be found in places other than those prescribed, and the material could be only a few hours old.

As students and teachers find new material, others benefit when the new material is posted to the group in the form of notices or annotations

SOME FORMS OF INTERACTIVITY

- E-mail: By using electronic mail, students and teachers can contact each other one to one or can send mail to a larger group using mailing lists. E-Mail can also be used to mail assignments and assessments to the teacher.
- Chat: Chat sessions are real-time discussions using the keyboard rather than voice.
- MOO and MUD: These are forms of chat with the ability to interact with the environment.
- Conferencing: A conference for the subject can be set up, and a framework of questions and discussion points can be written to it. Students then can respond to the conference and interact with other students and teachers involved in the course.
- Notice Boards: These areas allow students and teachers to post general information, respond to questions, or just have a say.
- Annotation: This feature allows staff and students to add comments to particular parts of the web page. When an annotation is recorded, the teacher needs to access the annotation and enter it in the annotation file. The teacher can modify the annotation or move it to a more appropriate area.
- Feedback: Using forms, feedback can be provided to students quickly.

PART 2: TRAINING AND SKILLING TEACHERS

Research about learning on the Internet has focused mainly on the student, with little or no work focusing on the needs of the teachers.[2-1] Presently, we are undertaking a research project to determine the skills and support requirements of teachers.[2-2] The initial project is due to be completed in July 1998. As a result of the project we are developing a support system for teachers/developers of Internet-based courses. What we have found so far:

- Teachers need to develop skills in the delivery of distance educational materials and the learning styles/needs of adult and distance learners.
- New pedagogical methods need to be taught and compared with more traditional "face to face" and distance education methods.
- A team approach to development is critical to the success of the project to meet deadlines and to provide new ideas and all the skill required.
- The teachers/developers need to know and make use of the technologies such as e-mail, chat and conferencing facilities, basic word processing activities (such as how to use styles, bookmarks and save as HTML), and an overview of how material is presented on the screen as opposed to the printed word. (Note: teachers do not need to know much about HTML.)
- course template assists teachers to get the material and ideas organised in a way that helps them to think beyond face to face and traditional distance (postal) education.
- The developers require support to think about how they can make use of some of the added-value features of the Web, like accessing other sites, conferencing, chat, and search tools.
- Teachers need to be introduced to, but not over overwhelmed by, what others are doing . A frequent e-mail newsletter is a means of providing ideas of what others are doing and new ways of using the power of the Internet in teaching.

WORKSHOPS

To assist teachers with the identified skills and support needs for developing courses on the Internet, we have started to develop a number of workshops and web pages to assist them. An index of workshop/tutorials follow:

WHAT IS TEACHING USING THE INTERNET ABOUT? -- The aim of this workshop is to provide a common background to teachers who would like to know more about the Internet and get some ideas of how it can be used in their own classes.

TEACHING ON THE WEB, HOW DO I DO IT? -- The aim of this workshop is to assist teachers to start to develop materials for delivery on the web. In addition to general outlines for developing material, issues such as security of material, copyright, and the role of the teacher are discussed.

A VIRTUAL TEAM -- The aim is to introduce teachers to some of the tools used in a virtual classroom. The tools include e-mail, conferencing software, and chat.

MY COURSE ON LINE -- The aim of this workshop is to prepare a plan to get a course on line. The participants of this workshop usually involve the subject specialist(s), distance educationalist, and team leader. The workshop attempts to provide a common understanding of the project being proposed and explores some of the unique features that are found in each. A checklist is used to identify some common information and raise the awareness of the teachers to some of the features that are available using the web and the course template.

THE TOOLS (1): AN OVERVIEW -- This workshop introduces teachers to some of the tools available to assist in creating web pages. The tools include web page creation software, HTML editors, and graphics packages. The treatment of the applications is basically an overview using a hands-on approach to produce some simple output of each of the applications used.

Following this workshop on tools, teachers can elect to take one or more of the following workshops.

THE TOOLS (2): WORD PROCESSORS AND OTHER OFFICE APPLICATIONS -- Using a word processor, concepts such as styles, bookmarks, and save as HTML are introduced. This workshop can be

presented either using a tutorial or as a face-to-face workshop. As the workshop lasts only about an hour, it can be combined with any or all of the following three workshops. This workshop can also be included in the first workshop "Tools (1): An overview". In this workshop it is possible to demonstrate how other common office applications can create web pages. Some applications include spreadsheets and graphic presentation software.

THE TOOLS (2): WEB PAGE CREATION APPLICATIONS -- Any of the major web page creation applications such as MS Frontpage or Claris Homepage is the main focus of the workshop.

THE TOOLS (3): HTML EDITORS -- For those teachers who want to work at the HTML level, one or more packages are used. In addition to the HTML editors, the workshop also covers text editors.

THE TOOLS (4): GRAPHICS PACKAGES -- A graphics package is introduced along with the use of scanners and digital cameras.

SEARCHING ON THE WEB -- Teachers are introduced to a number of different search tools and strategies that can be integrated into their lessons.

LEARNING STYLES AND LEARNING THEORIES -- This workshop discusses pedagogy, student learning styles and learning theories and how the Internet can enhance the learning environment.

KEEPING IN TOUCH -- Listservers, on-line conferences, news groups, and MUD/MOO/Chat are the focus of an on-line tutorial designed to help teachers keep in touch with people and developments in their interest areas. A series of interactive noticeboards/conferences are offered to teachers to encourage staff to share ideas, problems, and successes with others. Included are useful tools and URLs about education and the Internet.

PART 3: CHALLENGES

- Why use the Internet to deliver education? Reasons include financial (to save money), access (to provide access to those who would normally not be able to partake in the educational experience), and enrichment (involving students in a richer educational experience). Are these valid reasons for a particular organisation? What other reasons are there for using the Internet in course delivery?
- How can teachers create pages that make use of the web in a more effective way than just text? What are some ways or ideas teachers can use to make the experience educationally effective?
- How can different student learning styles be accommodated using Internet delivery of courses? By including several different learning strategies into one lesson or by producing several different lessons, one for each learning style? What are some of the more effective ways to deal with different learning styles?
- What are some effective strategies and programs that can be used to help teachers and administrators move from the "face to face" or distance education mode to using the Internet in education?
- What are some of the keys to providing a structure and the resources to support staff in the short term (getting started) and the longer term (keeping it going) so that courses using the Internet do not end up in the educational technological scrap heap?

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